CONFIDENTIAL

P-77B

~~SECRET~~

1 November 1957

25X1

MEMORANDUM FOR: THE RECORD

SUBJECT : Visit to [redacted] 25X1

1. Time and Place of Meeting - The meeting was held on October 22, 23, 24, 1957 at Cambridge, Massachusetts.

2. Attendance - [redacted] 25X1

3. Discussion

1. P-77 - The undersigned had hoped to check out and return with 10 RS-1 switch systems. This was not possible because difficulty had been encountered in low temperature operations. The receiver units operated satisfactory down to 40° F. where the battery ceased to be functional. They also continued to operate down to about 32° F. The undersigned informed the people at [redacted] that as long as the unit satisfied the above requirements they would be acceptable for our uses. By the time of the undersigns departure, the temperature problem that existed had been solved and the people at [redacted] were made aware that all 10 transmitters and receivers should have been given final tests prior to the undersigns next visit, in order that he might check out the units and return with them to Washington. 25X1 25X1

The evaluation of the [redacted] has been slowed up because we were trying to do it under adverse conditions. Since this condition has been clearified, progress will be forthcoming at a reasonable rate. 25X1

2. P-163-B - [redacted] - [redacted] 25X1 25X1
was informed of the results of this summers tests on the nine units at Washington. From these tests it is concluded that the limiting factor in the operation of an ST-2A is the tube life that can be obtained from a 1AD4 sub-miniature tube. It has been decided that on the production ST-2A to be made, all efforts will be toward increasing the life of the 1AD4. An increase in life can be obtained at a small sacrifice in power output. Some of the units have been giving up to 45 and 50 milli-watt output. These units appear to be good only for 1500 hours. If we were to drop the power output to 30 milli watts and thus, operate the tubes at a more conservative figure.

~~SECRET~~ CONFIDENTIAL

Memorandum for the record.
Subject: Visit to [redacted] 25X1

It is possible that we might double the life of the tubes. The undersigned, therefore, recommends that we set all ST-2A output at approximately 30 milli-watt output. The range we might lose in power output is far out weighed by the longer life operation.

The manufacturer has already encountering trouble on the delivery date of the hard-to-get vital tantalum capacitors. Using all pressure possible [redacted] was able to get a verbal agreement to a delivery on December 15. Were this delivery made, everything would be satisfactory but past experience with this company shows that if the delivery were made by December 31, we should consider ourselves fortunate. Therefore, the undersigned is going to make every effort possible to obtain more of a priority on the delivery of these items. Since his return from this trip the undersigned has been in touch with [redacted] of the Contract Branch and [redacted] is looking into the possibility of obtaining these capacitors from the Armed Services. 25X1 25X1 25X1

3. [redacted] - Because of the production contract of 100 ST-2A's, there has been a relief in the pressure on the ST-3. This will be the first time that an ST unit has been made that the field people were not depending on it to satisfy their operational needs. This relief in pressure allows us to try some minor variations which should bring about improved operation without running the risk of fouling up operations. Any of the changes that will be made will in general be minor and should have no drastic effect on the equipment. The following are some of the design goals that are being incorporated in the ST-3. The modulator will be a diode and will thus remove the effects of the aging of tubes upon the modulating sensitivity. In the ST-2A the capacity between the collector and emitter was used as the modulator. If the tubes aged, the value of this capacity changed as a function of the input capacity of the oscilator tube. The afore mentioned diode will eliminate this problem. By installing a diode in the feed back patch of the audio amplifier an AGC capability of up to about 60 db is expected to be possible. The diode changes the capacitor on positive peaks and thus, controls the bias of the first audio transistor. The demonstration showed to the undersigned was the following. With the undersigned talking directly into the microphone at a distance of about 2" and [redacted] about 9 ft. away talking in a soft voice, the undersigned was able to follow both sides of the conversation. Further details of this system will be forthcoming as the project progresses but at this time all indications are that we might have the answer to a long needed AGC system. 25X1

Memorandum for the record.
Subject: Visit to [redacted] 25X1

4. P-163-F - [redacted] - [redacted] finally 25X1
received the contract for the BT-2 transmitters during the week of October 21. Since this is a four month contract, delivery of the units should be forthcoming in late February 1958.

5. P-79-B - [redacted] 25X1
The units that had been returned to [redacted] had been found to have a 25X1
faulty connector. Since this was the only problem while they had the units, more tests were conducted. As a result of these tests it was shown that very little power was actually being coupled to the antenna. This situation has been rectified and the improvement can be shown in the following way. On earlier tests a few hundred was the maximum usable range, since the greater coupling has been brought about, the useful range has been increased to 800 yards. The units were carried to Washington by the undersigned and will undergo tests during the early part of November.

6. P-212 - Microphone Pre-amplifiers - The undersigned informed [redacted] of the conditions under which the four pre-amplifiers 25X1
were to operate. [redacted]s crewing of the situation was turned over 25X1
25X1 to [redacted] Four pre-amplifiers capable of operating with the DD-4
microphone will be ready for shipment on November 1, 1957. An
25X1 extra unit is being made up for APD and another for [redacted] to retain.
All of these units will be potted to insure protection against exposure to weather.

The microphone pre-amplifier contract for the Mp-3 was finally recieved by Baird during the latter part of the week of October 21. The undersigned is of the opinion that it is a three month contract and therefore delivery will be at the end of January.

7. P-193 - RT Transmitters - With the understanding that we do not want to spend a great deal of time developing a circuit for optimize, the Philco High Frequency Transistors, the people at [redacted] have been asked 25X1
to annalize the possibilities of installing some of these high frequency transistors in an RT-3 with the hope that by doing this we might have a medium powered all transistor FM transmitter giving 15 to 20 milli watts at 55 to 60 megacycles. Since this is more or less a feasible study the result of it should be ready upon the undersigns next visit to [redacted] Details, as to how many transmitter, and when, will 25X1
have to wait until the next visit.

CONFIDENTIAL

SECRET

Memorandum for the record.
Subject: Visit to [redacted] 25X1

8. AH-43 - [redacted] 25X1

[redacted] 25X1

9. AH-44 - Carrier Current System

A proposal for 100 transmitters and 50 receivers is being drawn up by [redacted] The following specifications to be incorporated in the proposal. The transmitters will be built on two frequencies such that two of them may be operated on the same line at the same time without causing interference in the receiver. Seventy-five of the transmitters will be built with the Burnell filter incorporated in the same package. The remain twenty-five will have filters supplied in a seperate package thus allowing more flexibility for concealment. The Burnell filter almost completely elimates harmonic transmission and thus, detectability on standard AM broadcast receivers. From the checks made at West Out it appears that the 2 db insertion loss in the filter will not adversely effect the operational capability of the system. 25X1

The passive switch problem that was encountered at West Out namely that under certain conditions the transmitter could be turned on but not turned off, is solved when Burnell filter is used in the Transmitter. The reason is the following: when a transmitter without the filter is put on the line it loads the line at the switching frequency of 28 KC and therefore, sufficient power is not developed across the switch to activate it, however, when the Burnell filter is used since it is a band-pass filter it blocks the 28 KC and the switch remains as sensative as before.

[redacted] 25X1
TSS/APD/KB

Distribution
Orig. - P-77
P-163-B - 1
P-163-E - 1
P-212 - 1
AH-43 - 1
AH-44 - 1

SECRET